

REMARKS/ARGUMENTS

In response to the Office Action mailed September 18, 2006, Applicants amend their application and request reconsideration. In this Amendment claims 3 and 4 are cancelled and claims 8 and 9 are added so that claims 1, 2, and 5-9 are now pending.

The Examiner objected to the Abstract as a run-on sentence. While the Abstract was similar to many abstracts that are readily accepted, the Abstract is amended to advance prosecution.

The Examiner acknowledged the Information Disclosure Statement filed with the patent application. A second Information Disclosure Statement was filed just after the mailing of the Office Action. An indication of consideration of the single cited publication in the next communication is respectfully requested.

In this Amendment claim 3 is cancelled as unnecessary. Clarifying amendments are made in claims 1, 5, and 6. Claim 5 is amended for clarity so that the ratio specified clearly corresponds to the ratio described in the patent application and with respect to Figures 14A-15B and not the inverse of that ratio. New dependent claim 8 describes the light guiding plate having a relatively simple structure, namely a rectangular cross-section. The use of a structure with such a simple shape is described in the patent application in the passage at page 18, lines 16-26. The advantages of using a light guiding plate with a simple shape are readily apparent. New claim 9 is based upon all of the described embodiments of the invention, for example, as illustrated in Figures 1A and 1B, in which each cylindrical lens has a single corresponding triangular prism and vice versa.

The invention concerns a display structure employing a liquid crystal display apparatus to produce a stereoscopic image. The stereoscopic image is produced by employing a light guiding plate with opposite light admitting ends or sides. Respective light sources are disposed at those respective sides and operated synchronously, i.e., in alternation. A double-sided prism sheet is interposed between the light guiding plate and the transmissive display panel, which is the liquid crystal

element. The double-sided prism sheet includes prisms that are triangular in cross-section and that have respective vertices on the side directed toward the light guiding plate. On the side of the double-sided prism sheet facing the transmissive display panel there are a plurality of cylindrical lenses. Each cylindrical lens is aligned with and has a corresponding triangular prism. As explained in the patent application, with this optical arrangement, light admitted at a first of the sides of the light guiding plate ultimately emerges from the double-sided prism sheet and passes through the transmissive display panel at a first angle relative to that transmissive display panel. Light emitted from the second of the light sources, after passage through the double-sided prism sheet, emerges from the transmissive display panel at a second angle. These first and second angles are divergent. By driving the light sources in synchronism with respective images formed by the transmissive display panel, images that are shifted by a parallax that produces a stereoscopic image appear. Displaying those two images alternatively in rapid succession, i.e., faster than can be perceived with the human eye, results in perception of a stereoscopic image.

There are important relationships, described in extensive detail, in the patent application, that result in the beneficial performance of the claimed display system. Various aspects of those relationships were described in claims 4-6 as examined.

Applicants express appreciation for clarification of the prior art rejection in the Office Action. The clarification was provided in an informal telephone conversation with the Examiner. The Examiner explained that no reliance is placed upon Powell (U.S. Patent 5,483,284) in rejecting any claims. Rather, a single rejection was made of all of examined claims 1-7. According to that rejection, all of those claims are rejected as unpatentable over Hirakata et al. (Published U.S. Patent Application 2002/0067332, hereinafter Hirakata), in view of Daiku (U.S. Patent 5,914,760). This rejection is respectfully traversed, particularly as to the claims now pending.

Each of claims 1, 5, and 6, as now pending, describes a particular relationship of the triangular prism and cylindrical lens elements of the double-sided prism sheet. As understood, it is the Examiner's position that Hirakata describes a liquid crystal

display device including multiple light sources at opposite sides of a light guiding plate and a synchronous operation of a liquid crystal display element with the operation of the light sources. As understood, Hirakata relates to the display of a motion picture, not of a stereoscopic image. For the purposes of this response, Applicants do not contest the characterization of Hirakata, but reserve the opportunity for traversing that leg of the rejection in any future prosecution.

Daiku was cited, as understood, as describing a double-sided prism sheet similar to the prism sheet described in the patent application. However, Daiku never describes any of the features of claims 1, 5, and 6 with respect to the particular characteristics of the prism sheet defined in each of those claims. There is no requirement, for example, of the coincidence of focal points of the cylindrical lenses and vertices of the triangular prisms in the prism sheet of Daiku. In fact, there is no reference to any focus or focal point within the text of Daiku. Daiku was not relied upon for the characteristics of the prism sheet described in amended claim 1.

In citing Daiku, reliance was placed upon the combination of a complex light guiding element surface and surfaces of lenses. The only exception in Daiku of using a light guiding plate with a complex-non-planar surface appears in Figure 30 of Daiku. According to that figure, when understood in combination with the description of that figure, the prism 340a at the left end of the light guiding plate is critical to the operation of that embodiment. In other words, the prism 340a replaces the various complex-shaped light emitting surfaces of the other light guiding plate embodiments of Daiku. Those complex surface shapes are required to achieve the desired reflection conditions described by Daiku. These conditions have nothing to do with any particular location of the foci of the cylindrical lenses or the vertices of the triangular prisms. Thus, neither Hirakata nor Daiku includes all of the elements of amended claim 1 and, therefore, their combination cannot suggest the invention as defined by that claim and the other pending claims.

The importance of the coincidence of the focal lengths and the vertices is described in the patent application at page 11, lines 16-20, although the patent

application makes clear that exact coincidence is not required to achieve the desired performance of the claimed display system. See the patent application at page 24, lines 3-7.

As described in the patent application from, for example, page 19, line 21 through page 20, line 11, the ratio of the thickness to the pitch of the double-sided prism sheet and its respective optical elements must fall within the range specified in claim 5 for acceptable performance. If this ratio is outside the specified range, crosstalk occurs. By "crosstalk", it is meant that the two images do not appear at sufficiently divergent angles to achieve the desired stereoscopic display. Rather, some of the image intended to be perceived by the left eye is perceived by the right eye and vice versa.

There is no description in either Hirakata or Daiku of the thickness ratio or of crosstalk suppression and it would not be expected that any such disclosure would appear there. Hirakata is directed to displaying a motion picture, not to displaying a stereoscopic image, so that crosstalk between two sequentially displayed images is not an issue to be considered by Hirakata. A principal objective of Daiku is providing uniform illumination across the entire expanse of a display and making the light distribution better in a frontal direction, and near the frontal direction. See Daiku at column 1, lines 34-44. This desire to make the display illumination more uniform in a particular central region is entirely contrary to the objective of the present invention, which is the display of two images, different by parallax, in two different, divergent directions with respect to the central frontal direction. Thus, the limitation of claim 5 concerning the range of the ratio of the thickness to the pitch produces a result entirely contrary to Daiku. Therefore, the limitation concerning thickness ratio cannot be found in Daiku. Accordingly, all of the elements of claim 5 are not present in any possible combination of Hirakata and Daiku so that *prima facie* obviousness has not been established with respect to that claim.

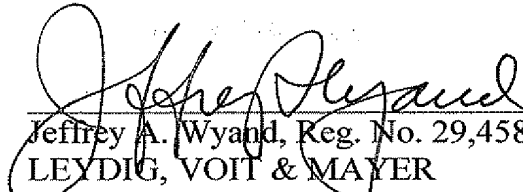
Claim 6, like claims 1 and 5, again expresses a characteristic of the double-sided prism sheet that achieves the desired stereoscopic display. The importance of

the vertex angle range described in that claim is explained in detail at page 23, lines 5-17 of the patent application. Because, as described in preceding paragraphs, the result achieved is contrary to the objectives of Hirakata and Daiku, and because there is no disclosure in those two publications of the limitation of the angular range to the range of claim 6, *prima facie* obviousness of that claim cannot be established based upon Hirakata and Daiku, taken in combination.

The dependent claims not discussed above, namely claims 2 and 7-9 are patentable over any potential combination of Hirakata and Daiku because the independent claim 1 is patentable over those two publications. Accordingly, at this time, it is not necessary to supply additional arguments with respect to the patentability of those four dependent claims.

Reconsideration and allowance claims 1, 2, and 5-9 are earnestly solicited.

Respectfully submitted,


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